

## ***Web-based Solutions for Pollution Prevention Training***

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**Goal:** The Department of Defense (DoD) is tasked to be a leader in pollution prevention, and a critical element of this mission is an effective workforce training program.

In 1993, President Clinton signed legislation requiring all federal agencies, including the armed forces, to comply with the Pollution Prevention Act of 1990.<sup>1</sup> Thereafter, all the major services within the DoD established policies designed to comply with the new pollution prevention regulations.

**Problem:** The DoD budget has remained essentially flat but its environmental and training budgets have declined since FY 1994.<sup>2</sup>

DoD agencies are now challenged not only by their increasingly vital mission of environmental leadership, but must also compete for dwindling training resources to be successful. This conflict between tasks and funding has led the DoD to interact with Industry to find and implement the most effective and cost efficient means of leveraging limited resources to achieve a mutually effective environmental leadership role in pollution prevention.

**Solution:** Web-based pollution prevention training for service personnel.

Internet- or web-based training enables students to complete a course using a computer, without ever having to enter a traditional classroom. With only access to the Internet, the student can choose from a large course catalog and complete their training at their own pace, when their schedule allows.



**Justification:** Recent research into the field of Internet training has justified this new training delivery system. A study administered at the California State University at Northridge reported that students participating in a course delivered online achieved 20 percent higher in test scores and data retention than students presented with the same material in a traditional classroom.<sup>3</sup> One reason for the student's success was the surprising finding that students online spent 50 percent more time working together, via email and chat rooms, than students in the classroom. The conclusion of the study: **Web-based training is effective.**

This new, more effective training delivery system arrives none too soon for DoD applications. The American Society for Training and Development estimates that work related education costs \$210 billion each year and that 78 percent of these costs are the result of lost productivity and expenses incurred while attending training.<sup>4</sup> In fact, most reports on the results of web-based training report a 35%-45% decrease in training time, with equivalent or better learning gains in terms of remembering and using the new knowledge.<sup>5</sup> Online educational alternatives and supplements offer solutions to minimizing training time without sacrificing desired training results. The conclusion: **Web-based training is efficient.**

<i>Training Approaches Matrix</i>	Classroom Training	Traditional Distance Learning	Web-based Training
Low cost for travel, lodging, and per diem		●	●
Low cost of course delivery per student		●	●
Large number of trainees easily accommodated		●	●
No training facility required			●
Interactive instructional design	●		●
Active instructor involvement	●		●
Easy access to reference information			●
Flexibility in training schedule		●	●
Centralized storage of student records			●
Productivity maintained while training			●
Ease of updating course content			●

Online training offers the convenience of other distance learning programs, but combines key elements of the classroom experience to make the learning more effective and interesting. All courseware or materials from training commands can be adapted and made available to personnel from one Internet address and training page. Internet-based training is easy to use, easy to access, and can be very effective. The primary advantages for the military or government user are lower overall cost; immediate, continuous, and flexible accessibility; desktop delivery of materials; and immediate updates to keep material current.

Several DoD agencies have begun to explore and exploit the potential for training over the Internet. Below are three case studies that illustrate how particular problems have been solved by web-based training.

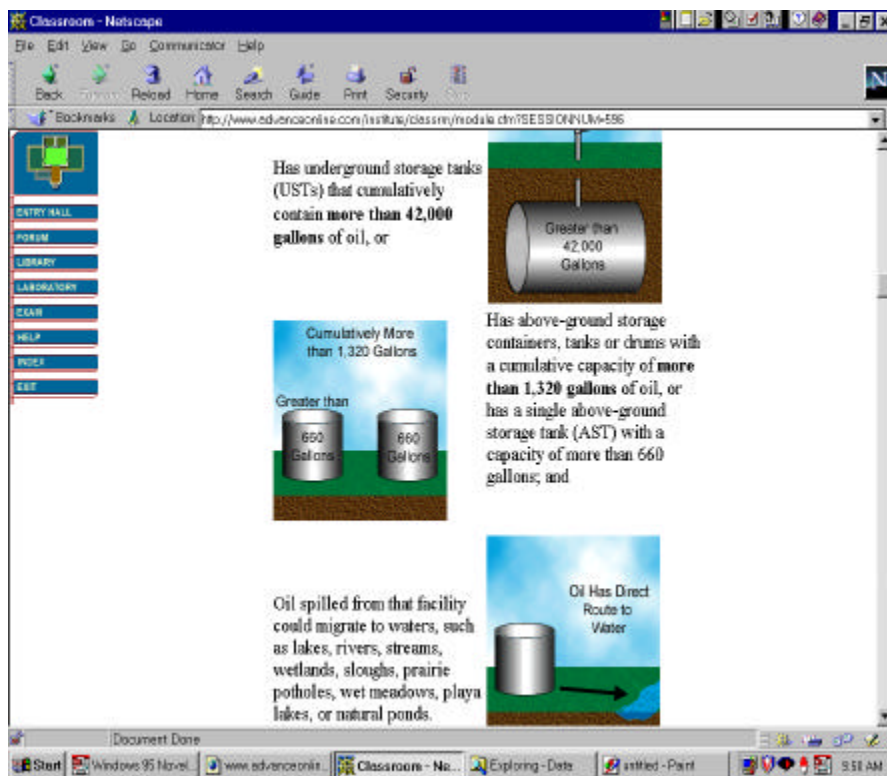
## Case Study: An Online Institute for a Leading Provider of Navy Training

**Problem:** The Civil Engineer Corps Officers (CECOS) provides courses for Civil Engineers Corps officers, Seabee chief petty officers, foreign officers, civilian DoD employees, and officers from the Navy and other branches of the armed forces. CECOS currently offers 32 environmental compliance courses hosted at various locations around the continental U.S. and the world.

Writing travel orders for personnel to attend these courses is expensive, and for some attendance is a logistical impossibility. New delivery systems are required to service personnel and customers who either cannot attend traditional classes or require certification immediately and cannot wait for the next available course opening.

**Solution:** AdvanceOnline, Inc., a Seattle-based company that develops environmental compliance courses for delivery over the Internet, created an Online Institute with four trial courses for CECOS. The goal of this project is to test web-based courseware and to determine if it is a viable solution to the needs of CECOS's clients. The courses include a demonstration course which teaches new students how to use the Online Institute, a SPCC course specifically tailored for CECOS, and an eight hour Hazardous Waste and Emergency Response Refresher (HAZWOPER) course.

CECOS personnel worked with AdvanceOnline project managers and technical writers to develop this Online Institute. For example, the SPCC course covers the EPA's requirements in the 40CFR, but was customized to meet the needs of CECOS. The result was a two-module SPCC course to train new operators, experienced operators, and first-line facility supervisors.



A typical segment of the AdvanceOnline SPCC course offered online.

## Case Study: U.S. Army Corps of Engineers Seminar Program

**Problem:** The Army Corps of Engineers Waterways Experiment Station (WES) is one of the chief caretakers of dredging regulations for both military and civilian applications. As such, a large number of personnel and customers turn to the Corps for information about dredging strategies and technology, and WES is tasked with disseminating this information to as broad an audience as possible.

WES has established a seminar program for the dredging community that addresses both local and national issues pertaining to sediment removal. Due to the high cost of sponsoring and attending these seminars, some regions can only afford to send a limited number of personnel each year. Also, new members of local dredging communities must frequently wait an entire year before a meeting is held and they have the opportunity to meet with other colleagues and participate in these seminars. A central location where information could be accessed by all interested parties and frequently updated was required to succeed in WES's mission of data distribution

**Solution:** A customized solution was created by AdvanceOnline that addressed the Corps' communication needs. The goal of this program is to enhance year long communication between the Corps and their clients. First, an Online Institute was created with the specific information requirements of WES in mind. Next, documents and courseware were formatted and developed for delivery over the Internet.

Using the company's Internet technology, users can download information, take courses on common dredging, sediment remediation, and water quality issues, and use internal email forums to communicate with one another. Intended to supplement the existing seminar program, these online communication tools will allow members to be in contact as new issues arise, and enable new members of the dredging community to share in a common base of information.

### **Case Study: Web-based SPCC Training for the Navy**

**Problem:** Naval Undersea Warfare Center, Keyport is tasked with training a multitude of workers and service personnel with Spill Prevention Control and Countermeasure (SPCC) plans and procedures. First, these personnel must be aware of the implications of an oil spill and carry out management practices that insure a safe and spill-free site. Secondly, they must be familiar with the site's SPCC plan and well versed in the execution of its inspection procedures. Maintaining a current state of training in SPCC management is a constant struggle and stretch base resources too thin.

**Solution:** To alleviate the pressure on the Keyport SPCC trainers, an additional section was added to the pre-existing SPCC awareness course offered online by AdvanceOnline. This new module emphasizes risk management as a motivator for following site-specific SPCC plan inspection procedures. Focused on the visual inspection of storage sites, the SPCC course allows trainers to build an awareness of the consequences of an unwanted discharge of oil, and reinforce the best management practices the Navy uses to prevent such accidental spills.

### **Innovative Web-based Training Solutions:**

In each of the above case studies, DoD training managers were searching for cost effective, high-quality training that would allow them to meet their broad training requirements with limited resources. Assessing all the available options (e.g., CD-ROMs/multi-media, videotapes, distance learning, video conferencing), and considering that the number of adults who use the Internet is rapidly increasing each year, web-based training provided the Ideal solution to their challenges.



Internet courses have several advantages over traditional classroom learning and other distance learning techniques. The goal of Internet delivery is to put the best elements of traditional classroom instruction into a convenient format, and there are many distinct advantages to web-based training:

- **Training flexibility.** Students can register for and enter classes at any time. Further, students can take a course on their own schedule and have the option of doing their training off-hours, including nights and weekends. Work schedules do not have to be impacted and productivity can be maintained.
- **Optimized learning.** In a classroom the instructor, who must cater to the needs of the entire class, sets the pace for learning. As a result, the fastest learners may become bored and the slowest learners may become frustrated. With the web-based training, the student can stop, start, review, or skip sections according to their knowledge, schedule, and pace.
- **Reduced travel.** Students can take courses at the convenience of home or the workplace without traveling to training centers.
- **Immediate updates.** Suppose that a federal regulation in a Spill Prevention Control and Countermeasures (SPCC) course has changed. Modifications to the on-line SPCC course can be done quickly, so that students can get the correct regulation information almost instantly. Courses can also be easily updated to keep pace with advances in technology.
- **Cost savings.** The student and his/her organization saves money through drastic reductions in overall training costs per student over traditional classroom courses. These cost savings are immediately realized by eliminating travel, lodging, and per diem expenses.

### ***Methodology of Online Courseware Delivery***

Training is vital to maintaining a workforce that is skilled, productive, competitive, and, for many industries, in compliance with regulations. However, traditional instructor-based training can present many challenges to organizations: ensuring consistent and high-quality training, keeping materials current, reaching large numbers of students including those in remote locations, and managing rising costs.

Online training provided by AdvanceOnline operates through two pathways: industry-specific courses published in our Online Institute and customized client services. The goals for publishing and client services are the same: to provide students with high quality training by maximizing the flexibility of the Internet.

The graphic below shows the components that an online course could contain and a brief summary of each:

**Classroom** – Students participate in course modules in the Classroom, so think of it as the place where the student learns the material.

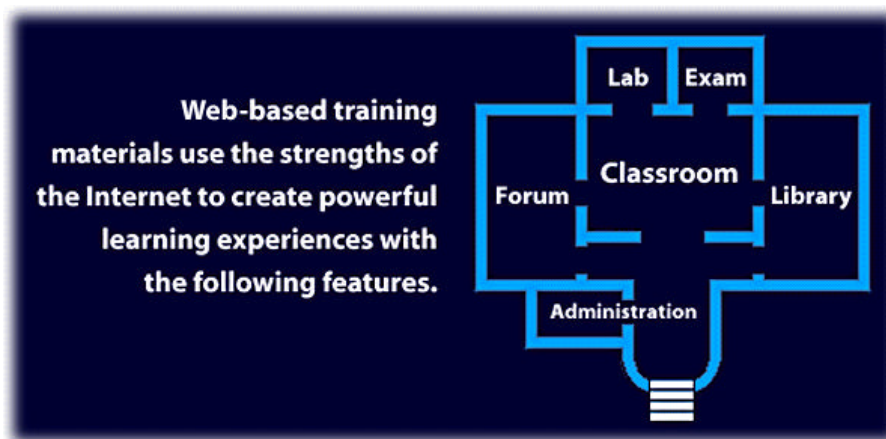
**Laboratory** – Students engage in interactive exercises to reinforce the Classroom material. This is an excellent way of improving your knowledge of the subject matter.

**Library** – Links students with outside reference material and data resources that are available 24 hours a day. This supplements the Classroom material.

**Forum** – The Forum is a critical element to the educational goals of online learning, as it connects students with other students and students with instructors via e-mail. Students can ask questions about content and discuss results of exercises with other students.

**Exam Room** – Upon completion of the module, students can test what they know. Multiple choice questions to assess knowledge and measure achievement are used.

**Administration** – Students can change passwords, check their progress and grades, and change personal information.



### **Conclusion:**

Web-based training is proving to be a viable and cost efficient alternative to traditional pollution prevention training. By offering effective and efficient training solutions online, DoD clients are better prepared to achieve their mission objectives of defense preparedness and environmental leadership.

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<sup>1</sup> Executive Order 12856

<sup>2</sup> Goodman, Sherri, Under Secretary of Defense (Environmental Security), 11 March 1998 speech

<sup>3</sup> Black, Jane. "Online Students Fare Better," [CNET News.com](http://www.cnet.com), 17 January 1997.

<sup>4</sup> Dennis, Verl E. "How Interactive Instruction Saves Time," [Journal of INSTRUCTION DELIVERY SYSTEMS](#), Winter 1994.

<sup>5</sup> Allen, Rex. "It's a Circus Out There," [CBT Solutions Magazine](#), 1998.